RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/647,067A

DATE: 02/12/2003 P.6

TIME: 12:25:10

Input Set : **E:\seqlist.txt**

Output Set: **N:\CRF4\02122003\I647067A.raw**

```
 4 <110> APPLICANT: Hsueh, Aaron J. W.
 5        Hsu, Sheau Yu
 6        Liang, Shan-Guang
 7        Van Der Spek, Petrus Johannes
 9 <120> TITLE OF INVENTION: Novel Mammalian G-Protein Coupled
10        Receptors Having Extracellular Leucine Rich Repeat Regions
13 <130> FILE REFERENCE: STAN-084
15 <140> CURRENT APPLICATION NUMBER: 09/647,067A
C--> 16 <141> CURRENT FILING DATE: 2003-02-07
18 <150> PRIOR APPLICATION NUMBER: PCT/US99/06573
19 <151> PRIOR FILING DATE: 1999-03-25
21 <150> PRIOR APPLICATION NUMBER: 60/079,501
22 <151> PRIOR FILING DATE: 1998-03-26
24 <160> NUMBER OF SEQ ID NOS: 39
26 <170> SOFTWARE: FastSEQ for Windows Version 4.0
28 <210> SEQ ID NO: 1
29 <211> LENGTH: 2856
30 <212> TYPE: DNA
31 <213> ORGANISM: homo sapiens
33 <400> SEQUENCE: 1
34 atgccgggcc cgctagggct gctctgcttc ctcgccctgg ggctgctcgg ctcggccggg 60
35 cccagcggcg cggcgccgcc tctctgcgcg gcgccctgca gctgcgacgg cgaccgtcgg 120
36 gtggactgct ccggaaaggg gttgacggcc gtaccggagg gtctcagcgc cttcacccaa 180
37 gcactggata tcagtatgaa caatatcacc cagttaccag aagatgcatt taagagtttc 240
38 ccatttctag aggagctaca actggctggt aacgaccttt ctcttatcca tccaaaagcc 300
39 ttgtctgggc tgaaagaact caaagtccta acactccaga ataatcagtt gagaacagtg 360
40 cccagtgaag ccattcacgg actgagtgct ttgcagtctt tacgcttaga tgccaaccat 420
41 attacctcag tcccggagga cagttttgaa gggcttgtcc agttacgcca tctgtggctg 480
42 gatgacaaca gcttgacgga agtgcccgtg cgtcccctca gcaacctgcc aaccctgcag 540
43 gcgctgacct tggctctcaa caacatctca agcatccctg acttcgcttt caccaacctt 600
44 tcaagcttgg tggttctgca tctgcataac aataaaatta aaagcctcag tcaacactgt 660
45 tttgatggac tagataacct ggaaaccttg gacttgaatt acaattactt ggatgagttt 720
46 cctcaggcta ttaaagccct tcccagcctt aaagagctgg gatttcacag taattctatt 780
47 tctgttattc ctgatggagc atttggtggt aatccactgc taagaactat tcatttgtat 840
48 gataatcctc tgtcttttgt ggggaactca gcatttcaca acctgtctga tctgcattgc 900
49 ttagtcattc gtggtgcaag cctggtgcag tggttcccca atctgaccgg aactgtccat 960
50 ttggagagtc taaccttgac agggacaaaa ataagcagca tacctgatga tctgtgccaa 1020
51 aaccaaaaga tgctgaggac tctggactta tcttataaca atataagaga ccttccaagt 1080
52 tttaatggtt gtcgtgcatt ggaagaaatt tcattgcagc gtaatcaaat ctccctaata 1140
53 aaggaaaata cttttcaagg cctaacatct ctaaggattc tagatctgag tagaaacctg 1200
54 atccgtgaaa ttcacagtgg agcttttgcg aagcttggga caattactaa cctggatgta 1260
55 agtttcaatg aattaacttc atttcctacg gaaggcctaa atgggctcaa tcaactaaag 1320
56 cttgtgggta acttcaagct gaaagacgcc ttggcagcca gagactttgc taatctcagg 1380
```

```
57 tctctatcag taccatatgc ttatcagtgt tgtgcatttt gggggtgtga ctctttatgc 1440
58 aaattaaaca cagaagataa cagcccccaa gaacacagtg tgacaaaaga gaaaggtgct 1500
59 acagatgcag caaatgtcac cagcactgct gagaacgaag aacatagcca aataattatc 1560
60 cactgtacac cttcaacagg tgctttcaag ccctgtgaat atttactggg aagctggatg 1620
61 attcgcctta cagtgtggtt cattttcctg gtcgccttgc ttttcaacct gcttgtcatt 1680
62 ttaacagtgt ttgcgtcttg ttcatcactg cctgcctcca aactcttcat aggcttgatt 1740
63 tctgtgtcta acttactcat gggcatctat actggcatcc ttacttttct tgatgctgtg 1800
64 tcctggggcc gatttgccga atttggcatt tggtgggaaa ctggcagcgg ctgcaaggta 1860
65 gccgggtctc tggcagtctt ctcctcagag agcgctgtat tcctattaac actggcagct 1920
66 gtggaaagaa gcgtatttgc aaaggatttg atgaaacacg ggaagagcag tcacctcaga 1980
67 cagttccagg tggccgccct cttagctttg ctgggtgccg cagtggcagg ctgcttcccc 2040
68 cttttccacg gagggcaata ttctgcatcg cccttgtgtt tgccgtttcc tacaggagaa 2100
69 accccatcgt taggattcac tgtgacctta gtgctattaa actcactggc attttactaa 2160
70 atggccatta tctacactaa actatactgc aacttagaga aggaggacct gtcggaaaac 2220
71 tcccagtcta gcgtgattaa gcacgttgcc tggctcatct tcacaaactg catcttcttc 2280
72 tgccctgttg catttttctc atttgcacca ttgatcacgg caatctccat cagccccgag 2340
73 ataatgaagt ctgttacact gatattcttc ccgttgcctg cttgcctgaa tccggtcctg 2400
74 tatgttttct tcaacccaaa gtttaaagaa gactggaagc tactgaagcg gcgtgttacc 2460
75 aggaaacacg gatctgtttc agtttccatc agcagccaag gcggttgtgg ggaacaggat 2520
76 ttctactatg actgtggcat gtattcccac ttgcagggta acctgactgt ctgtgactgc 2580
77 tgtgagtcat ttcttttgac aaaaccagta tcatgcaaac acttaataaa atcgcacagt 2640
78 tgtcctgtat tgacagcggc ctcttgccag aggccagagg cctactggtc tgattgtggt 2700
79 acacagtcag cccattctga ctatgcagat gaagaagatt cctttgtctc agacagctct 2760
80 gaccaggtgc aggcctgtgg acgagcctgc ttctaccaga gtcgtggatt ccctctggtg 2820
81 cgctatgctt acaatctaca gagagtcaga gactga                            2856
83 <210> SEQ ID NO: 2
84 <211> LENGTH: 951
85 <212> TYPE: PRT
86 <213> ORGANISM: human
88 <400> SEQUENCE: 2
89 Met Pro Gly Pro Leu Gly Leu Leu Cys Phe Leu Ala Leu Gly Leu Leu
90  1               5                  10                  15
91 Gly Ser Ala Gly Pro Ser Gly Ala Ala Pro Pro Leu Cys Ala Ala Pro
92              20                  25                  30
93 Cys Ser Cys Asp Gly Asp Arg Arg Val Asp Cys Ser Gly Lys Gly Leu
94          35                  40                  45
95 Thr Ala Val Pro Glu Gly Leu Ser Ala Phe Thr Gln Ala Leu Asp Ile
96      50                  55                  60
97 Ser Met Asn Asn Ile Thr Gln Leu Pro Glu Asp Ala Phe Lys Ser Phe
98 65                  70                  75                  80
99 Pro Phe Leu Glu Glu Leu Gln Leu Ala Gly Asn Asp Leu Ser Leu Ile
100                 85                  90                  95
101 His Pro Lys Ala Leu Ser Gly Leu Lys Glu Leu Lys Val Leu Thr Leu
102             100                 105                 110
103 Gln Asn Asn Gln Leu Arg Thr Val Pro Ser Glu Ala Ile His Gly Leu
104         115                 120                 125
105 Ser Ala Leu Gln Ser Leu Arg Leu Asp Ala Asn His Ile Thr Ser Val
106         130                 135                 140
107 Pro Glu Asp Ser Phe Glu Gly Leu Val Gln Leu Arg His Leu Trp Leu
```

RAW SEQUENCE LISTING

PATENT APPLICATION: **US/09/647,067A**

DATE: 02/12/2003

TIME: 12:25:10

Input Set : **E:\seqlist.txt**

Output Set: **N:\CRF4\02122003\I647067A.raw**

```
108 145                    150                    155                    160
109 Asp Asp Asn Ser Leu Thr Glu Val Pro Val Arg Pro Leu Ser Asn Leu
110                    165                    170                    175
111 Pro Thr Leu Gln Ala Leu Thr Leu Ala Leu Asn Asn Ile Ser Ser Ile
112                    180                    185                    190
113 Pro Asp Phe Ala Phe Thr Asn Leu Ser Ser Leu Val Val Leu His Leu
114                    195                    200                    205
115 His Asn Asn Lys Ile Lys Ser Leu Ser Gln His Cys Phe Asp Gly Leu
116         210                    215                    220
117 Asp Asn Leu Glu Thr Leu Asp Leu Asn Tyr Asn Tyr Leu Asp Glu Phe
118 225                    230                    235                    240
119 Pro Gln Ala Ile Lys Ala Leu Pro Ser Leu Lys Glu Leu Gly Phe His
120                    245                    250                    255
121 Ser Asn Ser Ile Ser Val Ile Pro Asp Gly Ala Phe Gly Gly Asn Pro
122                    260                    265                    270
123 Leu Leu Arg Thr Ile His Leu Tyr Asp Asn Pro Leu Ser Phe Val Gly
124         275                    280                    285
125 Asn Ser Ala Phe His Asn Leu Ser Asp Leu His Cys Leu Val Ile Arg
126         290                    295                    300
127 Gly Ala Ser Leu Val Gln Trp Phe Pro Asn Leu Thr Gly Thr Val His
128 305                    310                    315                    320
129 Leu Glu Ser Leu Thr Leu Thr Gly Thr Lys Ile Ser Ser Ile Pro Asp
130                    325                    330                    335
131 Asp Leu Cys Gln Asn Gln Lys Met Leu Arg Thr Leu Asp Leu Ser Tyr
132         340                    345                    350
133 Asn Asn Ile Arg Asp Leu Pro Ser Phe Asn Gly Cys Arg Ala Leu Glu
134         355                    360                    365
135 Glu Ile Ser Leu Gln Arg Asn Gln Ile Ser Leu Ile Lys Glu Asn Thr
136         370                    375                    380
137 Phe Gln Gly Leu Thr Ser Leu Arg Ile Leu Asp Leu Ser Arg Asn Leu
138 385                    390                    395                    400
139 Ile Arg Glu Ile His Ser Gly Ala Phe Ala Lys Leu Gly Thr Ile Thr
140                    405                    410                    415
141 Asn Leu Asp Val Ser Phe Asn Glu Leu Thr Ser Phe Pro Thr Glu Gly
142         420                    425                    430
143 Leu Asn Gly Leu Asn Gln Leu Lys Leu Val Gly Asn Phe Lys Leu Lys
144         435                    440                    445
145 Asp Ala Leu Ala Ala Arg Asp Phe Ala Asn Leu Arg Ser Leu Ser Val
146         450                    455                    460
147 Pro Tyr Ala Tyr Gln Cys Cys Ala Phe Trp Gly Cys Asp Ser Leu Cys
148 465                    470                    475                    480
149 Lys Leu Asn Thr Glu Asp Asn Ser Pro Gln Glu His Ser Val Thr Lys
150                    485                    490                    495
151 Glu Lys Gly Ala Thr Asp Ala Ala Asn Val Thr Ser Thr Ala Glu Asn
152         500                    505                    510
153 Glu Glu His Ser Gln Ile Ile Ile His Cys Thr Pro Ser Thr Gly Ala
154         515                    520                    525
155 Phe Lys Pro Cys Glu Tyr Leu Leu Gly Ser Trp Met Ile Arg Leu Thr
156         530                    535                    540
```

RAW SEQUENCE LISTING   DATE: 02/12/2003
PATENT APPLICATION: **US/09/647,067A**   TIME: 12:25:10

Input Set : **E:\seqlist.txt**
Output Set: **N:\CRF4\02122003\I647067A.raw**

```
157 Val Trp Phe Ile Phe Leu Val Ala Leu Leu Phe Asn Leu Leu Val Ile
158 545                 550                 555             ·       560
159 Leu Thr Val Phe Ala Ser Cys Ser Ser Leu Pro Ala Ser Lys Leu Phe
160             565                 570                 575
161 Ile Gly Leu Ile Ser Val Ser Asn Leu Leu Met Gly Ile Tyr Thr Gly
162             580                 585                 590
163 Ile Leu Thr Phe Leu Asp Ala Val Ser Trp Gly Arg Phe Ala Glu Phe
164     595                 600                 605
165 Gly Ile Trp Trp Glu Thr Gly Ser Gly Cys Lys Val Ala Gly Ser Leu
166     610                 615                 620
167 Ala Val Phe Ser Ser Glu Ser Ala Val Phe Leu Leu Thr Leu Ala Ala
168 625                 630                 635                     640
169 Val Glu Arg Ser Val Phe Ala Lys Asp Leu Met Lys His Gly Lys Ser
170             645                 650             ˅       655
171 Ser His Leu Arg Gln Phe Gln Val Ala Ala Leu Leu Ala Leu Leu Gly
172             660                 665                 670
173 Ala Ala Val Ala Gly Cys Phe Pro Leu Phe His Gly Gly Gln Tyr Ser
174             675                 680                 685
175 Ala Ser Pro Leu Cys Leu Pro Phe Pro Thr Gly Glu Thr Pro Ser Leu
176     690                 695                 700
177 Gly Phe Thr Val Thr Leu Val Leu Leu Asn Ser Leu Ala Phe Leu Leu
178 705                 710                 715                     720
179 Met Ala Ile Ile Tyr Thr Lys Leu Tyr Cys Asn Leu Glu Lys Glu Asp
180             725                 730                 735
181 Leu Ser Glu Asn Ser Gln Ser Ser Val Ile Lys His Val Ala Trp Leu
182             740                 745                 750
183 Ile Phe Thr Asn Cys Ile Phe Phe Cys Pro Val Ala Phe Phe Ser Phe
184     755                 760                 765
185 Ala Pro Leu Ile Thr Ala Ile Ser Ile Ser Pro Glu Ile Met Lys Ser
186     770                 775                 780
187 Val Thr Leu Ile Phe Phe Pro Leu Pro Ala Cys Leu Asn Pro Val Leu
188 785                 790                 795                     800
189 Tyr Val Phe Phe Asn Pro Lys Phe Lys Glu Asp Trp Lys Leu Leu Lys
190             805                 810                 815
191 Arg Arg Val Thr Arg Lys His Gly Ser Val Ser Val Ser Ile Ser Ser
192             820                 825                 830
193 Gln Gly Gly Cys Gly Glu Gln Asp Phe Tyr Tyr Asp Cys Gly Met Tyr
194             835                 840                 845
195 Ser His Leu Gln Gly Asn Leu Thr Val Cys Asp Cys Cys Glu Ser Phe
196     850                 855                 860
197 Leu Leu Thr Lys Pro Val Ser Cys Lys His Leu Ile Lys Ser His Ser
198 865                 870                 875                     880
199 Cys Pro Val Leu Thr Ala Ala Ser Cys Gln Arg Pro Glu Ala Tyr Trp
200             885                 890                 895
201 Ser Asp Cys Gly Thr Gln Ser Ala His Ser Asp Tyr Ala Asp Glu Glu
202             900                 905                 910
203 Asp Ser Phe Val Ser Asp Ser Ser Asp Gln Val Gln Ala Cys Gly Arg
204             915                 920                 925
205 Ala Cys Phe Tyr Gln Ser Arg Gly Phe Pro Leu Val Arg Tyr Ala Tyr
```

RAW SEQUENCE LISTING   DATE: 02/12/2003
PATENT APPLICATION: **US/09/647,067A**   TIME: 12:25:10

Input Set : **E:\seqlist.txt**
Output Set: **N:\CRF4\02122003\I647067A.raw**

```
206     930                935                940
207 Asn Leu Gln Arg Val Arg Asp
208 945                 950
211 <210> SEQ ID NO: 3
212 <211> LENGTH: 2082
213 <212> TYPE: DNA
214 <213> ORGANISM: homo sapiens
216 <220> FEATURE:
217 <221> NAME/KEY: misc_feature
218 <222> LOCATION: 768
219 <223> OTHER INFORMATION: n = A,T,C or G
221 <400> SEQUENCE: 3
222 ctacatctcc ataacaatag aatccactcc ctgggaaaga aatgctttga tgggctccac 60
223 agcctagaga ctttagattt aaattacaat aaccttgatg aattccccac tgcaattagg 120
224 acactctcca acttaaagga actaggattt catagcaaca atatcaggtc gatacctgag 180
225 aaagcatttg taggcaaccc ttctcttatt acaatacatt tctatgacaa tcccatccaa 240
226 tttgttggga gatctgcttt tcaacattta cctgaactaa gaacactgac tctgaatggt 300
227 gcctcacaaa taactgaatt tcctgattta actggaactg caaacctgga gagtctgact 360
228 ttaactggag cacagatctc atctcttcct caaaccgtct gcaatcagtt acctaatctc 420
229 caagtgctag atctgtctta caacctatta gaagatttac ccagtttttc agtctgccaa 480
230 aagcttcaga aaattgacct aagacataat gaaatctacg aaattaaagt tgacactttc 540
231 cagcagttgc ttagcctccg atcgctgaat ttggcttgga acaaaattgc tattattcac 600
232 cccaatgcat tttccacttt gccatcccta ataaagctgg acctatcgtc caacctcctg 660
233 tcgtcttttc ctataactgg gttacatggt ttaactcact taaaattaac aggaaatcat 720
W--> 234 gccttacaga gctggatatc atctgaaaac tttccagaac tcaaggtnat agaaatgcct 780
235 tatgcttacc agtgctgtgc atttggagtg tgtgagaatg cctataagat ttctaatcaa 840
236 tggaataaag gtgacaacag cagtatggac gaccttcata agaaagatgc tggaatgttt 900
237 caggctcaag atgaacgtga ccttgaagat ttcctgcttg actttgagga agacctgaaa 960
238 gcccttcatt cagtgcagtg ttcaccttcc ccaggcccct tcaaaccctg tgaacacctg 1020
239 cttgatggct ggctgatcag aattggagtg tggaccatag cagttctggc acttacttgt 1080
240 aatgctttgg tgacttcaac agttttcaga tcccctctgt acatttcccc cattaaactg 1140
241 ttaattgggg tcatcgcagc agtgaacatg ctcacgggag tctccagtgc cgtgctggct 1200
242 ggtgtggatg cgttcacttt tggcagcttt gcacgacatg gtgcctggtg ggagaatggg 1260
243 gttggttgcc atgtcattgg ttttttgtcc attttttgctt cagaatcatc tgttttcctg 1320
244 cttactctgg cagccctgga gcgtgggttc tctgtgaaat attctgcaaa atttgaaacg 1380
245 aaagctccat tttctagcct gaaagtaatc attttgctct gtgccctgct ggccttgacc 1440
246 atggccgcag ttcccctgct gggtggcagc aagtatggcg cctcccctct ctgcctgcct 1500
247 ttgccttttg gggagcccag caccatgggc tacatggtcg ctctcatctt gctcaattcc 1560
248 ctttgcttcc tcatgatgac cattgcctac accaagctct actgcaattt ggacaaggga 1620
249 gacctggaga atatttggga ctgctctatg gtaaaacaca ttgccctgtt gctcttcacc 1680
250 aactgcatcc taaactgccc tgtggctttc ttgtccttct cctctttaat aaaccttaca 1740
251 tttatcagtc ctgaagtaat taagtttatc cttctggtgg tagtcccact tcctgcatgt 1800
252 ctcaatcccc ttctctacat cttgttcaat cctcacttta aggaggatct ggtgagcctg 1860
253 agaaagcaaa cctacgtctg gacaagatca aaacacccaa gcttgatgtc aattaactct 1920
254 gatgatgtcg aaaaacagtc ctgtgactca actcaagcct tggtaacctt taccagctcc 1980
255 agcatcactt atgacctgcc tcccagttcc gtgccatcac cagcttatcc agtgactgag 2040
256 agctgccatc tttcctctgt ggcatttgtc ccatgtctct aa               2082
258 <210> SEQ ID NO: 4
259 <211> LENGTH: 693
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 02/12/2003
PATENT APPLICATION: **US/09/647,067A**   TIME: 12:25:11

Input Set : **E:\seqlist.txt**
Output Set: **N:\CRF4\02122003\I647067A.raw**

<u>Please Note:</u>
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; N Pos. 768
Seq#:7; N Pos. 3427,3496,3531,3568

VERIFICATION SUMMARY   DATE: 02/12/2003
PATENT APPLICATION: **US/09/647,067A**   TIME: 12:25:11

Input Set : **E:\seqlist.txt**
Output Set: **N:\CRF4\02122003\I647067A.raw**

L:16 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:234 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:720
L:575 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:3420
M:341 Repeated in SeqNo=7